

REMARKS

Claims 1-3 and 5-20 remain pending after response.

Applicants' Claimed Invention

Applicants' claimed invention is directed to an aqueous ink composition comprising water, a water-soluble solvent, a water-soluble resin, a dye, and a quick-drying property imparting agent, wherein the dye, if soluble in the water-soluble solvent, has a solubility in water lower than a solubility in the water-soluble solvent, the solubility of the dye in water being 10 wt% or lower, and the quick-drying property imparting agent has a solubility in water lower than a solubility in the water-soluble solvent.

More specifically, the claimed invention is directed to an aqueous ink composition which exhibits drying properties similar to those exhibited by ethanol-based ink compositions but which do not include water as a solvent. Further, the ink composition of the present invention exhibits highly desirable drying properties in comparison to prior art compositions. More specifically, after the ink composition is applied to a printing material, the water soluble solvent first evaporates while water remains. As a result, the quick drying property agent is caused

to precipitate due to its low solubility in water so that excellent fixability (ink dryability) is attained.

Applicants' invention is neither disclosed nor suggested by the prior art.

Prior Art Rejections

A. Summary of Rejections

The Examiner makes the following rejections against the pending claims:

(1) Claims 1-3, 5-12, 16 and 19 stand rejected under 35 USC 102(e) as being anticipated by Kitamura U.S. Patent No. 6,498,222.

(2) Claims 17-18 stand rejected under 35 USC 103(a) as being unpatentable over Kitamura U.S. Patent No. 6,498,222 in view of Doi et al U.S. Patent No. 6,378,999.

(3) Claims 1-3, 5-16, and 19-20 stand rejected under 35 USC 103(a) as being unpatentable over JP '105 in view of Kitamura U.S. Patent No. 6,498,222.

(4) Claims 17-18 stand rejected as being obvious over the combined teachings of JP '105 in view of Kitamura and Doi et al U.S. Patent No. 6,378,999.

(5) Claims 1-3, 5-16 and 19-20 stand rejected as being

obvious over the combined teachings of *JP '105* in view of *Ohta et al '265*.

(6) Claims 17-18 stand rejected as being obvious over the combined teachings of *JP '105* in view of *Ohta* and *Doi et al '999*.

Submission of Verified Translation

In response, applicants submit herewith a verified translation of the Japanese priority document. Applicants are accordingly entitled to a priority date of August 11, 2000. The August 11, 2000 priority date antedates both the March 9, 2001 filing date of *Kitamura et al '222*, as well as the November 30, 2000 publication date of the corresponding *Kitamura et al* PCT application. Based on the fact that *Kitamura et al '222* is now antedated as a reference, the above rejections (1)-(3) are without basis and should be withdrawn.

The JP '105 reference

With regard to the remaining rejections (4)-(6), *JP '105* is the main reference relied upon by the Examiner.

JP '105 discloses an aqueous ink composition comprising water, a hydrophilic solvent, a water-insoluble binder, and europium-thenoyltrifluoroacetone chelate as a fluorescent substance.

In both the *JP* '105 reference and the claimed invention, the europium complex is used together with a colorant, solvent and water. However, as acknowledged by the Examiner, the *JP* '105 reference is silent with respect to quick-drying properties, and in particular, the reference fails to disclose or suggest that a quick-drying property imparting agent could or should be added to shorten the fixing time.

Moreover, the *JP* '105 reference uses a high-boiling point hydrophilic organic solvent such as ethylene glycol monoethyl ether. This is in contrast to the present invention which requires the use of a water-soluble solvent having either a boiling point lower than that of water, or a vapor pressure higher than that of water in order to enhance drying properties of the ink composition.

The Examiner notes at page 10 of the Action that since *JP* '105 discloses both high and low boiling solvents, it would be obvious to select one over the other to result in the claimed invention. However, given the fact that the reference does not attempt to achieve quick drying properties, the selection of the low boiling point solvent in lieu of the high boiling point solvent could only be made in the face of total lack of

motivation, as well as with hindsight reconstruction of the prior art.

The JP '105 reference accordingly fails to disclose or suggest the claimed invention.

The Ohta et al reference

Ohta fails to cure the deficiencies of JP '105. Ohta teaches that a water-soluble cationic polymer having an affinity to colorants may be used to improve waterfastness. The patent studies quick drying properties concerning papers by use of penetration accelerators (column 8, lines 58-61).

The present invention, by contrast, utilizes the difference in solubility of the quick-drying property imparting agent in water and the water-soluble solvent to attain quick drying properties not only for paper but also for impermeable printing materials such as plastic films. Such a concept is neither disclosed nor taught by the reference.

The present invention admittedly exemplifies benzotriazole as a suitable quick-drying property imparting agent which is also mentioned in the Ohta reference (albeit not as a quick-drying property imparting agent). However, the reference uses benzotriazole as a "dissolution accelerator" which easily dissolves inks even after being dried so as to prevent the inks

from being dried at the tip of nozzles. This is the opposite result sought by applicants whereby a quick drying agent is added to achieve "quick drying" of the ink, not prevention of ink drying. Thus, the present invention is clearly different from that of *Ohta* with respect to the use of benzotriazole.

Further, the reference teaches at column 5, lines 55-58 that a solvent having a lower vapor pressure than water is preferred for use. This teaching is also in direct contradiction to the claimed invention. While the Examiner dismisses this teaching at page 12 of the Action ("*Ohta et al* is only used for its teaching of 1A-benzotriazole-1-methanol"), the Examiner cannot combine teachings of *Ohta* with those of *JP '105* in a vacuum.

The Examiner would have one of ordinary skill in the art add (without motivation) a quick-drying property agent to the composition of *JP '105*, while at the same time selecting the requisite low boiling solvent (also without motivation). The Examiner's logic lacks foundation in the art.

For instance, as noted above, *Ohta* uses a completely different class of organic solvents than do applicants (i.e., solvents having a lower vapor pressure than water instead of solvents having a higher vapor pressure than water). As such,

the benzotriazole compound of *Ohta* would not function in the same manner as in applicants' invention as the respective components are not identical. The requisite motivation to use benzotriazole in the invention of *JP '105* is thus lacking.

Further, *Ohta* discloses at column 2, lines 16-34 that a colorant having a specific structure is used in combination with a highly reactive water-soluble cationic polymer having a primary amino group to attain good lightfastness and waterfastness. However, as discussed above, the reference does not disclose or suggest that water, a water-soluble solvent as defined by claim 1, a water-soluble resin, a dye having low solubility in water (10 wt.% or lower), and a quick drying-property imparting agent having solubility in water lower than a solubility in the water-soluble solvent are used to attain an excellent drying property as claimed. Further, the reference neither discloses nor suggests the use of a fluorescent dye.

The combined teachings of *JP '105* and *Ohta* thus do not result in the claimed invention.

The Doi reference

Doi teaches at column 4, lines 22-23 that the coloring material is not particularly restricted. However, Examples 1-17 employ pigments such as carbon black as the coloring material.

Thus, the reference is substantially directed to a pigment ink. The reference merely mentions dyes as the coloring material but does not teach that the dye has a solubility in water lower than a solubility in a water-soluble solvent to attain good drying properties as in applicants' invention. As described at column 2, lines 3-38, the object of the reference is to attain good dispersion stability and printing quality. Thus, the advantage of the present invention - good drying property - is not obvious from the teachings of the reference.

The combined teachings of *JP '105*, *Ohta* and *Doi* thus do not result in the claimed invention.

Conclusion

The cited prior art neither discloses nor suggests the use of a quick-drying property imparting agent as defined in the claimed invention. The teaching by the references of the use of benzotriazole as an anticlogging agent is contradictory to the claimed invention. The cited references fail to disclose or suggest the attainment of excellent fixability (ink dryability) utilizing specific solubility and boiling point (vapor pressure) of components in an ink composition as defined in applicants' claimed invention. Applicants' claimed invention is accordingly

patentably distinct from the cited prior art, and the rejections should be withdrawn.

Further, the previously-submitted Declarations under 37 CFR 1.132 confirm the patentability of the claimed invention as discussed in applicants' prior responses.

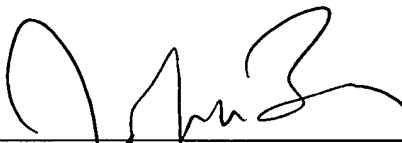
The application is now believed to be in condition for allowance and an early indication of same is earnestly solicited.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§ 1.16 or 1.17; particularly, extension of time fees.

Very truly yours,


BIRCH, STEWART, KOLASCH & BIRCH, LLP

By



John W. Bailey
Reg. No. 32,881

P.O. Box 747
Falls Church, VA 22040-0747
(703) 205-8000


JWB/JWH

Attachment: Verified translation of JP 2000-244428